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**Distribution of *Sceliphron destillatorium* (ILLIGER 1807)
(Hymenoptera: Sphecidae) in Moravia and Slovakia with notes on
the invasion to the antropogenous localities**

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A b s t r a c t: This study summarizes all data of the distribution of *Sceliphron destillatorium* in Moravia and Slovakia. The species is quite abundant in south-eastern parts of both Moravia and Slovakia. It was observed or collected in 23 squares in Moravia and in 58 squares in Slovakia. The distribution map with potential northern distribution border is also presented. *S. destillatorium* shows similar features of distribution with its invasive relative *Sceliphron curvatum*, but lower value of synantrophy. Potential concurrence of these two species is discussed.

K e y w o r d s: *Sceliphron destillatorium*, Sphecidae, distribution, invasion, Moravia, Slovakia.

Introduction

About 30 species of the genus *Sceliphron* KLUG 1801 are distributed in warm regions all around the world. Five species were recorded in southern parts of Europe and three of them also in the central Europe. Two of them, *Sceliphron curvatum* (SMITH 1870) and *S. caementarium* (DRURY 1773), were introduced in 70's of the 20th century (LECLERCQ 1974; VECHT 1984). First mentioned was formerly distributed in middle Asia underneath the highest mountain ranges of the world; recently it is known from 13 European countries (BOGUSCH et al. 2005; SCHMID-EGGER 2005). The second American species was brought to Europe on ships and recently it is widely distributed in southern Europe, is expanding inland and reaching Austria and other parts of central Europe (GUSENLEITNER 2002).

The autochthon species *S. destillatorium* (ILLIGER 1807) is widely distributed in the Palearctic region. It has been presented from southeastern parts of Europe, northern parts of Africa, and also from southwestern and central Asia (NOSKIEWICZ & PULAWSKI 1960; BALTHASAR 1972; BOHART & MENKE 1976; DOLLFUSS 1991). The northern border of its distribution area goes through central Europe – Poland, Czech Republic and Germany (CELARY 1996). In the Czech Republic and Slovakia this sphecid wasp represents a rare conspicuous species included in lists of endangered taxa (PECINA 1979).

Its biology is quite well known, although there are no publications specially describing it excluding popular articles or books (PECINA 1979; RANDUŠKA 1993). *S. destillatorium* lives in warm localities and, as the others of the genus, builds nests of mud on stones, trees, and rocks and also on houses. The nests are filled with paralyzed spiders as a food for the brood (BALTHASAR 1972; BOHART & MENKE 1976). This publication brings all data on the distribution of *S. destillatorium* in the Czech Republic and Slovakia. Foremost, we discuss the synantrophy, invasion to the settlements (towns and villages) and re-orientating to new niches in the northern part of the distribution area.

Material and methods

The list of localities and distribution map were made according to localities known from literary sources and the following collections: National Museum, Prague (curator Jan Macek), Moravian Museum, Brno (curator Igor Malenovský), Slovak National Museum – Andrej Kmeť Museum, Martin (curator Vladimír Straka), Slovak National Museum – Natural Science Museum, Bratislava (curators Vladimír Janský, Ján Kautman and Roman Csefalvay), Šariš Museum, Bardejov (curator Tomáš Jászay), Tekov Museum, Levice (curator Vladimír Smetana), Western-Slovakian Museum in Trnava, Trnava (curator Rafael Alayo), Petr Bogusch (Praha), Valerián Franc (Banská Bystrica), Peter Liška (Trenčín), Jozef Lukáš (Bratislava), Martin Říha (Brno), Miroslav Srba (Praha), Pavel Tyrner (Litvínov) and Dušan Vepřek (Přerov). Localities are presented listed by the biogeographical regions in both countries according to SKALICKÝ (1997) and ČEPELÁK et al. (1989).

All specimens are cited in appropriate part of the article; observations with no further evidence material were submitted according to the typical features of the species. The numbers mentioned in brackets at the locality represent the grid mapping square code used for the faunistic research in the Czech Republic and Slovakia (ČEPELÁK et al. 1989; PRUNER & MÍKA 1996). The distribution map was constructed according to all the references; literary or by material.

Localities of *Sceliphron destillatorium* in Moravia

Published localities

ZAVADIL et al. 1937: Kozlov u Litovle (6368), Moravský Písek (7069), Hodonín (7168), Milotice nad Bečvou (6473), Blansko (6665), Znojmo (7162), Kroměříž (6770).

Revised material

17 Mikulovská pahorkatina: Mikulov (7165), 2.VII.1990, 1 F, M. Říha lgt., det. et coll.; 18 Jihomoravský úval: Heršpice u Slavkova (6867), March 1933, 1 M, J. Volák lgt., J. Šnoflák det., coll. Moravian Museum Brno; Slavkov u Brna (6867), June 1942, 1 F, building of the court, J. Volák lgt., J. Šnoflák det., coll. Moravian Museum Brno; Opatovice (6965), 10.VII.1991, 1 F, Z. Navrátil lgt., M. Říha det. et coll.; Brno – Ivanovice (6865), 15.VII.1998, 1 F, I. Trojan lgt., M. Říha det. et coll.; Brno – Holásky (6865), 26.VII.- 4.VIII.1998, 2 MM and 2 FF, I. Trojan lgt., M. Říha det. et coll.; Hodonín (7168), 3.VII.1931, 1 F, E. Hachler lgt., F. Gregor det., coll. Moravian Museum Brno; July 1932, 1 M, B. Starý lgt., J. Macek det., coll. National Museum Praha; Bzenec (7069), 22.VII.1938, 1 F, V. Zavadil lgt., J. Macek det., coll. National Museum Praha; Sedlec u Mikulova (7266), 6.VII.1952, 3 FF, at the pond, E. Staněk lgt. et det., coll. Moravian Museum

Brno; July 1991, 1 F, R. Lučan lgt., M. Srba det. et coll.; Lednice (7166), 1.VII.1986, 1 F, S. Bílý & J. Jelínek lgt., J. Macek det., coll. National Museum Praha; Lednice – Břeclav (7266), 3.-5.VII.1993, 1 F, J. Háva lgt., M. Říha det. et coll.; Břeclav (7267), park at the railway station, July 2000, 1 F, D. Vepřek observed;
 19 Bílé Karpaty: Divnice (6873), 7.VII.1996, 1 F, O. Svoboda lgt., M. Říha det. et coll.; Kuželov (7171), 1.VIII.1998, 1 F, J. Šilinger lgt., M. Říha det. et coll.;
 20 Jihomoravská pahorkatina: Čejč (7067), 14.VII.1939, 1 M, O. Šustera lgt., 8.VIII.1943, 1 M, V. Zavadil lgt., J. Macek det., coll. National Museum Praha; July 1941, 1F, M. Kocourek lgt. et det., coll. Moravian Museum Brno; Kroměříž (6770), 1 F, O. Fiala lgt., J. Macek det., coll. National Museum Praha; Velehrad (6870), 13.VIII.1939, 1 F, V. Zavadil lgt., J. Macek det., coll. National Museum Praha; Salaš u Velehradu (6870), July 2002, 1 F, M. Srba lgt., det. et coll.; Staré Město u Uherského Hradiště (6970), June 2003, 1 M, M. Srba lgt., det. et coll.;
 21 Haná: Mikulůvka (6573), July 1939, 1 F, J. Vodička lgt., J. Macek det., coll. National Museum Praha; Hodolany u Olomouce (6469), 1939, 1 F, B. Tomšík lgt. et det., coll. Moravian Museum Brno; Přerov (6570), 10.VI.1995, 1 F, D. Vepřek lgt., det. et coll.;
 63 Českomoravské mezihoří: Svitavy (6264), 11.VII.1956, 1 F, in the museum building, E. Staněk lgt. et det., coll. Moravian Museum Brno;
 84 Podbeskydská pahorkatina: Štamberk (6474), July 2003, 1 F, railway station, D. Vepřek observed.

Localities of *Sceliphron destillatorium* in Slovakia

Published localities

MOCSÁRY 1897: Trenčín (7174), Rožňava (7389), Sobrance (7299).
 CHYZER 1902: Malé Ozorovce (7395).
 ZAVADIL et al. 1937: Nitra (7674), Kameňany (7487), Trenčín – Zlatovce (7074).
 JÁSZAY & PANIGAJ 1988: Zobraná – Mirkovské skaly (7194), Viničky (7596), Bardejov – Rhodyho (6793).
 LUKÁŠ 1991: Nitra – Dražovce (7674), Nitra – Dolné Štitáre (7674), Zoborská lesostep forest-steppe (7674).
 RANDUŠKA 1993: Zvolen (7480).
 SMETANA 1996: Sninské rybníky ponds (7099), valley dolina Chotinka (6999).
 DEVÁN 1999: Grúň (7172), Horné Srnie – Zábava (7074), Chropov (7269), U Devánov (7271).
 LUKÁŠ 2003: Bratislava – Mlynská dolina (7868).

Revised material

050 Rožňavská kotlina: Rakovnica (7388), 3.VIII.2002, 1 F, village periphery, P. Bogusch lgt., det. et coll.;
 060 Slovenský kras: Plešivec (7488), July 1949, 1 F, V. Balthasar lgt., J. Macek det., coll. National Museum Praha; Domica (7588), 2.VII.1952, 1 F, A. Rudolf lgt., J. Macek det., coll. National Museum Praha; Silica (7489), 29.VII.1997, 1 F, V. Smetana lgt. et det., coll. Tekov Museum Levice;
 070 Volovské vrchy: Dobšiná (7188), 30.7.1994, 1 F, H. Olejár lgt., V. Smetana det., coll. Tekov Museum Levice;
 090 Malé Karpaty: Bratislava – Devín (7867), 15.VII.1998, 1 M; Devínska Kobyla (7867), 1.VIII.1999, 1 F; Bratislava – Líščie údolie (7868), 15.VII.2001, 1 M; Bratislava – Mlynská dolina (7868), 12.VIII.2004, 1 F, all specimens J. Lukáš lgt., det. et coll.; Devínska Nová Ves (7767), 15.VIII.1999, 1 F, J. Lukáš lgt., det. et coll., 27.V.2005, 1 nest, K. Juršíková lgt., P. Liška det. et coll.;
 100 Považský Inovec: Soroš – Sedlisko (7572), 12.VII.2002, 1 M, J. Lukáš lgt., det. et coll.;
 120 Strážovské vrchy: Diviaky nad Nitricou – Rokoš (7276), 2.VII.1982, 1 M, J. Lukáš lgt., det. et coll.;
 240 Turčianska kotlina: Martin – Záturčie (6979), 17.VII.1987, 2 nests, V. Straka lgt., P. Deván det. et coll.;
 300 Štiavnické vrchy: Veľká Vápenná (7776), 14.VII.1986, 1 F, V. Smetana lgt. et det., coll. Tekov Museum Levice; Jablonoce (7678), 21.VII.1996, 1 F, V. Smetana lgt. et det., coll. Tekov Museum Levice; Bohunický Roháč – Žabia hora (7678), 18.IX.1997, 3 nests, D. Bátovský observed; Banská Štiavnica (7579), 11.VIII.2001, 1 F, J. Lukáš lgt., det. et coll.;

- 360 Zvolenská kotlina: Banská Bystrica – Uhlisko (7280), 18.VI.2000, 1 F, V. Franc lgt., det. et coll.;
- 392 Lučenská kotlina: Lučenec (7683), 22.VIII.2004, 1 nest, V. Janský lgt. et det., coll. Slovak National Museum Bratislava;
- 400 Košická kotlina: Seleška (7392), 12.VII.1947, 1 F, V. Zavadil lgt., J. Macek det., coll. National Museum Praha; Turňa nad Bodvou (7391), 24.VI.1948, 1 F, Z. Bouček lgt., J. Macek det., coll. National Museum Praha; Turnianské Podhradie (7391), 1.VIII.1991, 1 F, J. Lukáš lgt., det. et coll.;
- 430 Cerová vrchovina: Filákov (7785), 9.VII.1938, 1 F, V. Zavadil lgt., J. Macek det., coll. National Museum Praha; Hajnáčka (7785), July 1990, 1 F, on the roof of the pub, D. Vepřek observed; Košice (7293), datum not found, 1 M, R. Čepelák lgt., J. Macek det., coll. National Museum Praha;
- 440 Slanské vrchy: Herľany (7194), 22.V.1996, 1 nest, V. Janský lgt. et det., coll. Slovak National Museum Bratislava;
- 450 Zemplínske vrchy: Viničky (7596), 29.VII.1985, 1 M and 1 F, T. Jászay lgt. et det., coll. Šariš Museum Bardejov;
- 490 Považské podolie: Trenčín – valley of the river Váh at Odevné závody (7174), 3.VII.2002, 1 M, J. Lukáš observed; 9.VII.2004, 1 M, J. Lukáš observed; 18.VII.2004, 1 M and 1 F, J. Lukáš lgt., det. et coll.; Trenčín – Opatov (7074), 22.VII.2004, 1 F, P. Liška observed; Zlatovce (7174), datum not found, 1 F, R. Čepelák lgt., J. Macek det., coll. National Museum Praha; datum not found, 1 M, R. Čepelák lgt. et det., coll. Moravian Museum Brno;
- 710 Vihorlatské vrchy: Vihorlat, (7198), July 1990, 2 FF, Z. Černý lgt., M. Říha det. et coll.;
- 720 Bukovské vrchy: Nová Sedlica (6901), July 1990, 1 F, Z. Černý lgt., M. Říha det. et coll.; Uličské Krivé (7000), 18.VII.2005, 1 F, L. Dvořák observed;
- 740 Ondavská vrchovina: Bardejov – valley of the Mníchovský potok stream (6693), 3.VIII.1973, 1 F, L. Jászay lgt., T. Jászay det., coll. Šariš Museum Bardejov; Nižný Orlik (6695), 9.VIII.2004, 1 F, J. Kautman lgt. et det., coll. Slovak National Museum Bratislava;
- 750 Laborecká vrchovina: Dolina Chotinka (6999), 4.VIII.1993, 1 M, V. Smetana lgt. et det., coll. Tekov Museum Levice;
- 760 Beskydské predhorie: Sninské rybníky ponds (7099), 1.VIII.1993, 1 F, V. Smetana lgt. et det., coll. Tekov Museum Levice; Humenné – valley of the river Laborec (7097), 12.VIII.2000, 1 F, S. Uhrin lgt., P. Liška det. et coll.;
- 770 Borská nížina: Lozorno – Kamenný Mlyn (7668), 3.VI.1997, 1 M, R. Alayo lgt. et det., coll. Western Slovakian Museum Trnava; 1.VI.1999, 1 M, R. Alayo lgt. et det., coll. Western Slovakian Museum Trnava; Moravský Svätý Ján (7468), 5.VIII.2002, 1 F, J. Lukáš lgt., det. et coll.;
- 790 Podunajská rovina: Komárno (8174), June 1968, 4 FF, emerged from collected nests, R. Rozkošný lgt. et det., coll. Moravian Museum Brno; Miloslavov – Alžbetin Dvůr (7869), 8.VII.1989, 1 M, B. Žitňanský lgt., J. Lukáš det. et coll.; Šúr – Panónsky háj (7769), 1.IV.2000, 1 nest, J. Lukáš lgt., det. et coll.; Ostrov Kopáč (7968), 17.VIII.2000, 1 F, J. Lukáš lgt., det. et coll.; Čenkovská lesostep foreststeppe (8277), 21.VIII.2001, 1 F, J. Lukáš lgt., det. et coll.; Bratislava – building of the Slovak National Gallery (7868), 15.VIII.2002, 1 F, J. Lukáš lgt., det. et coll.; 15.X.2002, 1 F, B. Žitňanský lgt., J. Lukáš det. et coll.;
- 801 Trnavská pahorkatina: Trnava (7671), 29.VI.1989, 1 M, A. Drdulová lgt., R. Alayo det., coll. Western Slovakian Museum Trnava;
- 802 Nitrianska pahorkatina: Nitra (7774), July 1938, 4 FF, A. Hoffer lgt., 30.VI.1938, 1 F, V. Zavadil lgt., J. Macek det., coll. National Museum Praha; 1938, 1 F, A. Hoffer lgt. et det., coll. Moravian Museum Brno;
- 803 Žitavská pahorkatina: Nitra (7674), 17.VIII.2002, 1 F, P. Fend'a observed; Maňa (7875), 12.VI.2003, 1 F, V. Smetana lgt. et det., coll. Tekov Museum Levice;
- 804 Hronská pahorkatina: Štúrovo (8177), July 1947, 1 F, F. Pospíšil lgt., J. Macek det., coll. National Museum Praha; Kamenin (8177), 2.VII.1986, 1 F, V. Smetana lgt. et det., coll. Tekov Museum Levice;
- 805 Ipeľská pahorkatina: Kamenica nad Hronom (8178), 30.VI.1946, 1 M, O. Šustera lgt., J. Macek det., coll. National Museum Praha; Levice – valley of the river Hron (7777), 6.VI.1983, 1 M, V. Smetana lgt. et det., coll. Tekov Museum Levice; Levice – Kalvária (7777), 11.VIII.1984, 1 F, V. Smetana lgt. et det., coll. Tekov Museum Levice; Levice – Rybníky III (7777), 6.VI.1993, 1 M, L. Kollár lgt., V. Smetana det., coll. Tekov Museum Levice; Bátovce (7778), 15. VIII.2003, 1 F, D. Bátovský lgt., J. Lukáš det. et coll.;
- 810 Východoslovenská pahorkatina: Remetské Hámre (7199), 23.VII.1987, 2 MM, fire site on the village periphery, D. Vepřek lgt., det. et coll.;

820 Východoslovenská rovina: Somotor (7596), 6.VII.1952, 2 FF, M. Kocourek lgt., J. Macek det., coll. National Museum Praha; 27.VI.1952, 1 F, M. Kocourek lgt. et det., coll. Moravian Museum Brno; 14.VIII.1988, 1 F, P. Tyrner lgt., det. et coll.; Královský Chlmec (7598), 14.-24.VII.1954, 4 FF, 23.VII.-4.VIII.1956, 1 M, 20.VI.-4.VII.1962, 1 F, V. Balthasar lgt., J. Macek det., coll. National Museum Praha; 25.VI.1960, 1 F, E. Staněk lgt. et det., coll. Moravian Museum Brno; Leles (7598), 6.VII.1990, 1 F, D. Vepřek lgt., det. et coll.; Trebišov (7396), July 2005, 1 F, M. Doričová observed.

Discussion

All collected data show that *S. destillatorium* occurs in 23 squares in Moravia and in 58 squares in Slovakia (see the distribution map). It is presented especially in southern and eastern parts both of Moravia and Slovakia. This kind of distribution certainly corresponds with the features of the landscape: lowlands are situated both in Moravia and Slovakia in south-eastern parts, while mountains are usually in the north of both regions. These mountain ranges, which represent the northern part of the Carpathians, probably make the northern border of distribution of this sphecoid wasp. In the contrary, there are a few localities published north of the Carpathians in Poland: Czesławice, Bieszczady mountains (SOSZYŃSKI & SOSZYŃSKI 1985), Szymburk and Ropa (CELARY 1996). First mentioned locality lays about 150 km northern of the Polish-Slovak border and represents the northernmost locality of this species in Europe.

Like many other hymenopterans with center of diversity in Mediterranean region, *S. destillatorium* does not occur in Bohemia. It has not been ever presented from this country in spite of the fact that locality in Svitavy (square 6264) is situated only 20 km eastern of the border between Bohemia and Moravia and it represents one of the northernmost localities of this species in Europe.

S. destillatorium is the only autochthon species of this genus in the Czech Republic and Slovakia. Formerly, it was presented to be a species living in land but not in human's settlements (ZAVADIL et al. 1937). On the other way, already these authors and their counterparts present many localities in village peripheries. This species lives in large territories; it builds its nests usually on human's settlements, but probably hunts in land. In difference of the invasive *S. curvatum*, it does not prefer living in cities, but small villages or town peripheries. It was many times observed, that *S. destillatorium* is more abundant in village peripheries than in city centers. This fact may be important for the success of *S. curvatum* to settle new localities: niches of these two species are alike, but not identical. That's why both species occur together in many parts of Slovakia (compare the distribution map with BOGUSCH et al. 2005), but they do not fight. According to this fact, published speculations that *S. curvatum* will in near future replace *S. destillatorium* or other species of autochthon sphecoid wasps in our fauna belong more to sci-fi than to general science (see GEPP 2003). Recently, it is much important to study spreading of two invasive sphecoid wasps and potential changes in abundance of *S. destillatorium* in all regions.

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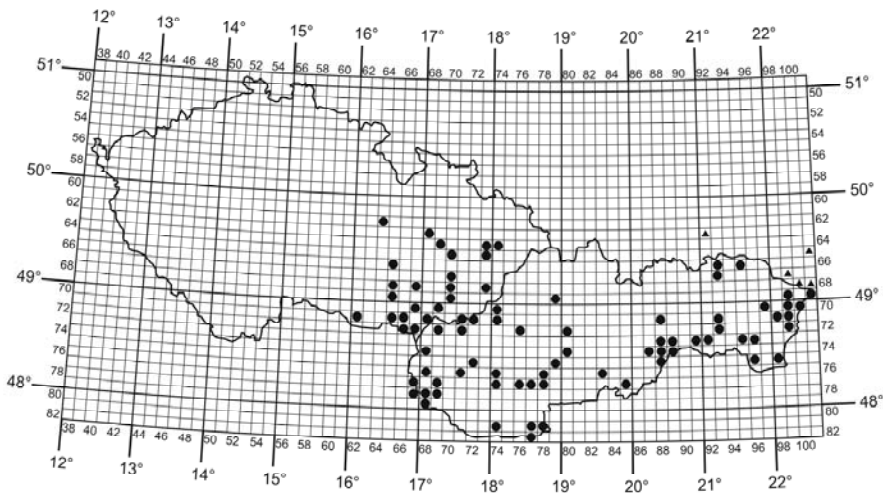


Fig. 1: Distribution map of *Sceliphron destillatorium* (ILLIGER 1807) in the Czech Republic and Slovakia. ● – localities in the Czech Republic and Slovakia, ▲ – localities in Poland adopted from CELARY (1996). The northernmost polish locality in Czesławice is not marked in the map.